

West Sudan, the Logon, Bagrimma (Baghirimi), and Mandara (Wandela) of the Shary basin, and the Maba of Wadai. But the actual relationship of these and other outlying branches to the main trunk can only be determined by future research. Meantime, Dr. Nachtigal rests satisfied with having demonstrated the existence of this widely-ramifying family and its radical difference both from the Hamitic and Bantu groups. "How far the relationship may extend will be made more and more evident by a further study of the Sudan languages, especially the Hausa, Masa, Bagrimma, Maba. For the present it is enough for me to have established the relations of the Tubu dialects to each other, and of both to the Kanuri and Baele" (p. 209).

But when he comes to the consequences of his premisses he speaks with singular hesitation, as if overweighted or hampered by the brilliant generalisations of Lepsius. The fact is, this theory of the three zones leaves no room in Africa for the great linguistic family which Nachtigal has nevertheless discovered there. But instead of boldly giving up the theory, he timidly suggests alternatives, in order somehow to reconcile it with the actual conditions. After clearly showing the independent position of Tubu, he leaves the reader to choose between a possible "extremely remote connection with the Negro languages, or, if it be preferred, to regard it as a distinct species, which has held its ground between the Negro and Hamitic linguistic types" (p. 201). Most ethnologists will probably be prepared to accept the latter alternative, even at the risk of adding one more to the two "linguistic types" which alone Lepsius will tolerate. The only point of contact between Tubu and Bantu seems to be the absence of grammatical gender, a negative feature which both share with a thousand other languages in the Old and New Worlds. Yet apparently in order to save Lepsius's scheme, Nachtigal is content on this weak ground to allow a connection between Teda and Negro, adding, still more inconsequently, "in which case, considering the vagueness of the concept 'Negro' (bei der Unbestimmtheit des Begriffes 'Negro'), there can certainly be no objection to group the Tubu themselves with the Negroes, although, taking the word in its ordinary sense, in other respects they essentially differ from them" (p. 209). So the Negro—that is, the most marked of all human varieties—is frittered away to a "vague concept," because Tubu is a no-gender language, or because Lepsius will allow only two linguistic types in Africa.

But by getting rid of this theory, an easier exploit than getting rid of the Negro, everything will fall into its place. The consideration that the centre of evolution of the Tubu group lies, not in Sudan, but in the Sahara, far north of the original Negro domain, placed by Lepsius south of the equator, would almost alone suffice to separate it from that connection. Dr. Nachtigal himself shows that Teda, or northern Tubu, represents the germ, of which the southern Dasa, Kanuri, Baele, &c., are later developments. He also shows that the migrations, as was natural to expect, were always from the arid plains and uplands of the Sahara to the fertile region of Sudan. Except under the lash of the slave-driver, the Blacks seem never to have moved northwards. But we have seen that the roving nomads, Tuariks in the west, Tubu in the east, have everywhere, all along the

line, penetrated from their desert homes into the "Black Zone." The inference seems obvious. Nachtigal himself regards the Tubu as "a thoroughly pure, homogeneous people (*eine durchaus reine, homogene Bevölkerung*), unmodified by any changes from remote times" (p. 190). He also shows their close physical resemblance to the Tuariks (Berbers) of the western Sahara, and their essential difference from the Negro type. The anthropologist will not hesitate to remove them from the latter and group them with the former race. The Tubu and Berbers are thus ethnically two slightly differentiated branches of the Hamitic section of the great Mediterranean (Caucasic) division of mankind.

From this standpoint the Tubu speech, although as radically distinct from the Hamitic as it is from the Bantu, will no longer present any difficulty. In Europe the Mediterranean races have developed at least one radical form of speech, the Basque; in Asia several, the Aryan, Semitic, Georgian, and others in Caucasia. Why should they not have developed two in Africa, the Hamitic and Tubu? Elsewhere I have endeavoured to account for this remarkable phenomenon of specific diversity of speech within the same ethnical group.<sup>1</sup> Here it will suffice to note the fact, and if the no-gender character of Tubu be urged as a difficulty, the reply is twofold. First, no-gender languages occur also in other Caucasian groups, as in Basque, Georgian, Lesghian; secondly, although gender has not been developed in Tubu, nevertheless it contains the raw material, so to say, which has been elaborated into a system by the more cultured Hamitic peoples. After admitting that, but for the absence of this feature, there would be no scruple (*Bedenken*) in affiliating Tubu to the Hamitic order, Dr. Nachtigal adds: "Tubu also certainly seems to possess the elements by which gender is indicated in the Hamitic—*o* and *p* for the masculine, *t* for the feminine, as in *o-mri*, man; *mi*, son, by the side of *adi*, woman; *dô*, daughter; *dê*, mother; *edi*, female" (p. 200). Here *d* of course answers to *t*, the universal mark of the feminine gender in Hamitic, and in the Berber group often both prefixed and postfixed, as in *akli*, negro; *taklit*, negress.

Room must therefore be made in Lepsius's scheme for a third linguistic family, the honour of having determined which belongs to Dr. Nachtigal. This Tubu family must be assumed to have been independently evolved in remote ages by the Garamantes, ancestors of the Tubu nomads, during long isolation in Kafara, Kawâr, Tibesti, and the other oases of the eastern Sahara and Fezzan. Lastly, the Tubu themselves must be absolutely separated from the Negro ethnical connection, and grouped with the Hamites in the Mediterranean division of mankind.

A. H. KEANE

#### OUR BOOK SHELF

*The Electric Lighting Act, 1882, the Acts incorporated therewith, the Board of Trade Rules, together with numerous Notes and Cases.* By Clement Higgins, M.A., Recorder of Birkenhead, and E. W. W. Edwards, B.A., Barrister-at Law. (London: W. Clowes and Sons, 1883.)

PRACTICAL electricians unversed in law, and lawyers unversed in the practical applications of electricity, will

<sup>1</sup> See Appendix to my "Asia" (Stanford Series), p. 695.

find much useful matter in this volume. The authors are thoroughly competent to deal with the legal aspect of the case, whilst their judicious comments show that they appreciate at least many of the technical difficulties necessarily presented by the subject. The contents deal with the various sections of the Electric Lighting Act, adding copious notes and comments, and references to legal precedents and decisions. Quotations are given from the evidence collected by the Select Committee on Electric Lighting, and from the Rules and Regulations recommended by the Society of Telegraph Engineers and Electricians concerning the prevention of fire-risks. One or two minor slips in the science are to be regretted, as for example where the authors state that a current of unit strength will decompose '09378 grammes of water per second. It is a pity, moreover, that they have departed from customary usage in speaking of the "strength" of a current as its "intensity." That term has been and is still so much abused, that so long as it is liable to mislead its use should be avoided. One of the authors describes himself as "Fellow of the Physical Society of London." We were not aware that the Physical Society of London recognised any such grade amongst its members.

#### LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.]

#### Ben Nevis Observatory

IN NATURE, vol. xxvii. p. 399, there is among its notes of scientific intelligence, a paragraph mentioning that at a public meeting in Glasgow last week, called at the suggestion of Sir William Thomson and Mr. John Burns of Castle Wemyss, it was agreed to collect money for a permanent observatory on Ben Nevis.

As NATURE has always kindly encouraged this project of the Scotch Meteorological Society, perhaps you will permit me, as Chairman of the Society's Council, to add a little to this brief notice.

A requisition was presented to the Lord Provost of Glasgow, which was signed, not only by the eminent physicist and the extensive ship-owner mentioned in your notice, but also by Dr. Grant of the Glasgow Observatory, suggesting that a meeting of the merchants and ship-owners should be called to aid the Society in raising the necessary funds.

The Lord Provost in compliance called a meeting for the 14th inst., which was well attended, and at which very able speeches were made, not only by the three requisitionists, but by the Lord Provost and by other influential citizens. The result of the meeting was a resolution expressing approval of the Society's proposal, and appointing a Committee to obtain subscriptions in aid of it.

It is expected that the amount of the funds required will be obtained from a community so wealthy and so public-spirited as that of Glasgow. But if we are mistaken in this, the Society's Council intend to appeal to other communities also for help, being resolved to resort to every legitimate means of attaining an object allowed on all hands to be of national importance.

The Council began with Glasgow, not only because it is the richest community in Scotland, but because the Scotch Meteorological Society originated there. The late Sir John G. Forbes of Pitsligo, and I, being both of us interested in meteorology, applied to the British Association for the Advancement of Science, when it met in Glasgow in September, 1855, under the presidency of the Duke of Argyll, to see whether it would approve of the formation of a Meteorological Society for Scotland. The result of our application was the following resolution by the General Council:—

"Resolved, that the British Association express their satisfaction at the proposed establishment of a Scotch Meteorological

Society, and their willingness to afford the Society any assistance which can be yielded by the establishment of the Association at Kew.

"That a letter to this effect be addressed to the Meteorological Society by the General Secretary."

On the basis of this testimonial by so influential a body, Sir John Forbes and I proceeded at once with the organisation of a Society, the Duke of Argyll being our first President, and assisting us greatly by his patronage.

When the Society resolved on attempting the formidable undertaking of establishing an observatory on Ben Nevis, at a cost of at least 5000*l.*, the first movement for funds was made among its own members and friends, the result of which was a promise of 1400*l.* provided the full sum of 5000*l.* was raised. In order to be enabled to fulfil this condition, the Society's Council not unnaturally went first to the town where it originated, and which more than any other town would be supposed to take an interest in the Society and its operations.

There was this further reason: that the Observatory being intended to be on the west coast, its proximity to Glasgow would add to that interest, and the more so as, on account of the vast shipping and commerce of the Firth of Clyde, no district of Scotland could be so deeply concerned in obtaining additional data for storm warnings.

The British Association, by way of encouraging the formation of the Meteorological Society, expressed in the resolution before quoted a willingness to afford to it assistance from its establishment at Kew.

This promise, unfortunately, the Association was unable to fulfil. But this disappointment to our Society has now been so far compensated by a handsome donation of 100*l.* towards the Ben Nevis fund from Dr. Siemens, the present President of the Association.

The Scotch Meteorological Society is one out of many proofs of the usefulness of the British Association in encouraging researches in particular branches of science, and the recent recognition of the Society's work in this Ben Nevis enterprise by so eminent a man as the present President of the Association is very gratifying to the Council.

DAVID MILNE HOME

Milne Graden, Coldstream, February 26

#### Indian Archegosaurus

THE skull and part of the vertebral column of a large labyrinthodont, allied to *Archegosaurus*, was obtained in 1864 from the Bijori-group of the trias-jura of India, and presented to the Asiatic Society of Bengal. It was soon after sent to England for determination. All traces of this unique and important specimen, which should now belong to the Government of India, are now lost, and I write in the hope that some of your readers may be able to afford us a clue to its present position. The specimen can hardly have been mislaid, as it is some two feet in length.

RICHARD LYDEKKER

The Lodge, Harpenden, Herts, February 21

#### The "Vampire Bat"

KINDLY permit me to ask for a further explanation from Mr. Geo. J. Romanes about the vampire bat, in regard to which he says in his criticism of "Zoological Sketches" (Oswald): "Mr. Bates says (I presume it is a clerical error giving Mr. Belt as the authority) the vampire, however, is the most harmless of all bats." Yet he, Mr. Bates, would lead us to believe that a species of the same genus, *Phyllostoma*, is a blood-sucker, and had even attacked himself (see p. 91 of the fifth edition of his "Naturalist on the Amazon").

Is there a species of *Phyllostoma* that lives on fruits, the vampire, and another species of the same genus that Mr. Bates calls "the little grey blood-sucking *Phyllostoma*," that may possibly attack human beings?

The late Chas. Waterton seems to have had no doubt that the vampire attacks persons asleep, and gives an instance.

The common name vampire may not be in South America confined to the species *Phyllostoma spectrum*. Mr. Romanes' remarks would lead one to believe that he considered there was no species of bat that attacked human beings.

THOS. WORKMAN

4, Bedford Street, Belfast, February 15

DR. ROMANES, in criticising a book ("Zoological Sketches"), in NATURE, vol. xxvii. p. 333, says: "The writer speaks of